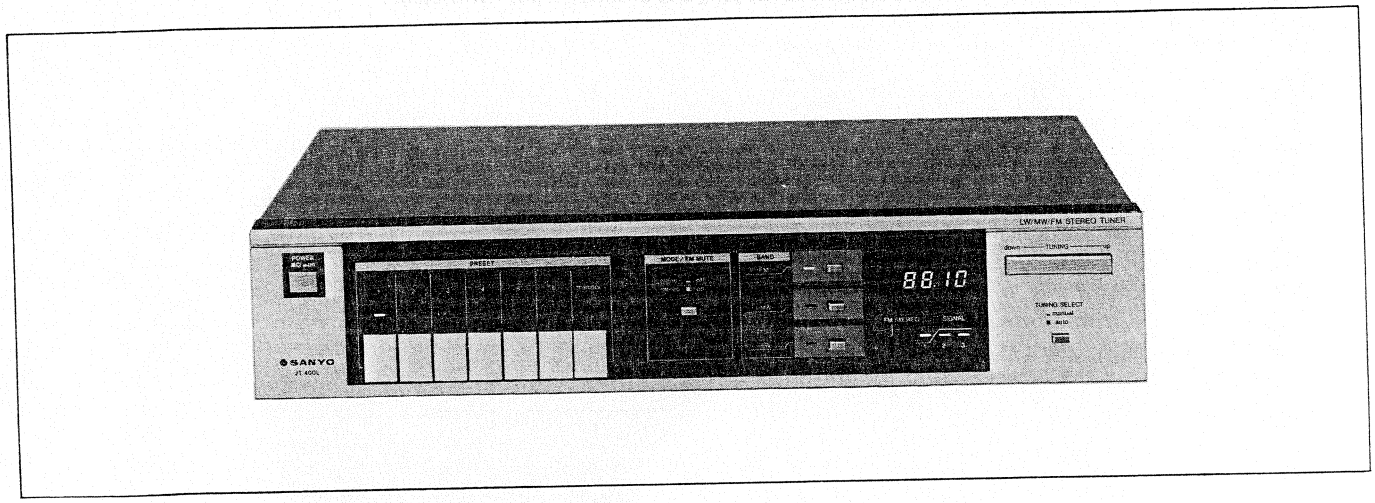
SERVICE MANUAL

SANYO

AM/FM STEREO TUNER

JT 400L

(EUROPE)



SPECIFICATIONS

NOTE:
The below mentioned specifications are mainly based on the IHF measurements standard. They can therefore not directly be compared with specifications based on the DIN standard or other standards.

FM section

Frequency range	87.5 – 108 MHz (0.05 MHz steps)
Usable sensitivity	2.0 μV (mono)
Signal to noise ration (1 mV ANT.)	70 dB (mono)
Harmonic distortion (1 kHz)	0.2% (mono)
Frequency response	30 Hz – 15 kHz
Stereo separation (1 kHz)	45 dB
IF rejection	75 dB
Aerial input	75 ohms unbalanced

AM (LW/MW) section

Frequency range	LW: 153 – 360 kHz (1 kHz steps)
	MW: 522 – 1611 kHz (9 kHz steps)
Sensitivity	MW: 350 μV/m, LW: 500 μV/m
Signal to noise ratio (5 mV/m)	MW: 40 dB
Selectivity	30 dB

General

Power requirements	AC: 220V, 50Hz
Power consumption	13 W
Dimensions (Approx.)	420 (W) x 220 (D) x 85 (H) mm
	(16-1/2" x 8-5/8" x 3-3/8")
Weight (Approx.)	3 kg (7 lbs.)

* Specifications subject to change without notice.

NOTE

The POWER switch is mounted on the secondary side and does not disconnect the set from AC-power, even when switched off.

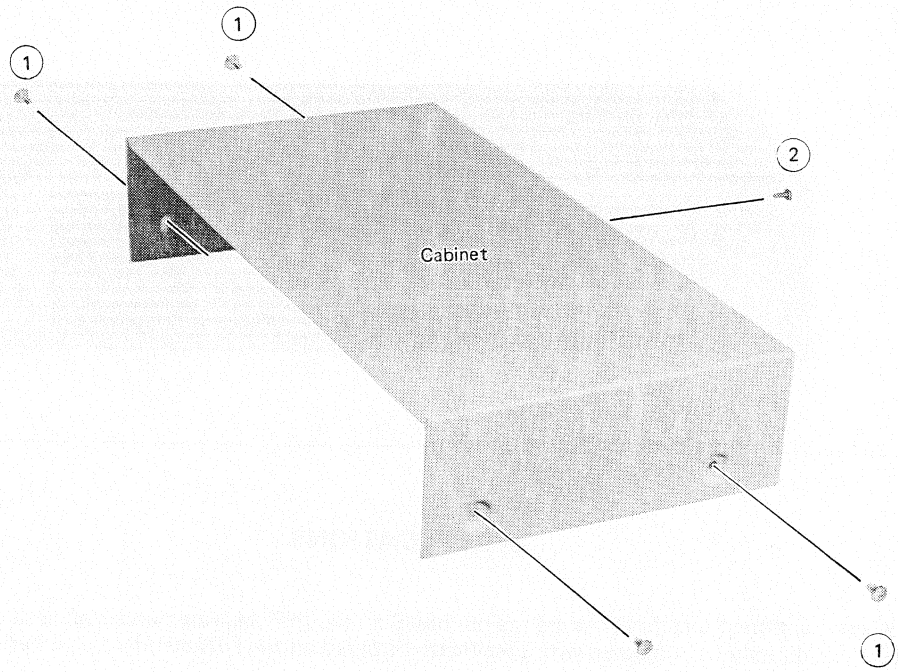
WM-8863

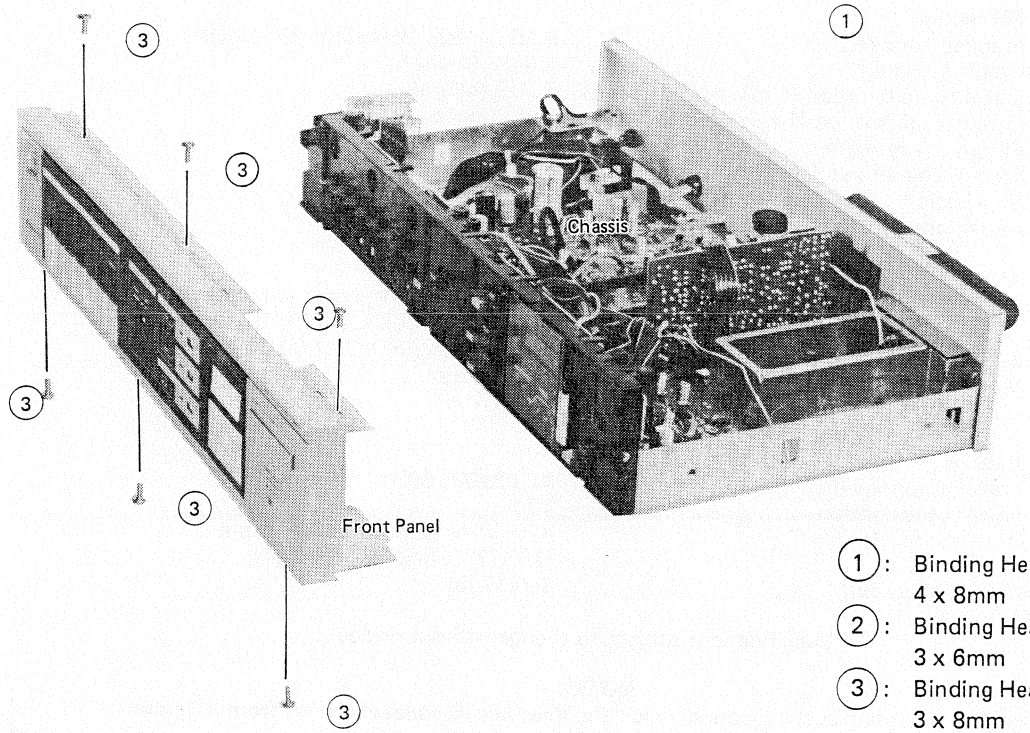
DISMOUNTING OF CABINET AND FRONT PANEL

- Perform disassembly of tuner after removing the power supply cord with out fail.
- Remove parts in order of disassembly as numdered.

1. TO DISMOUNT CABINET
   (1). Take out total 4 screws (Binding head tapping 4 x 8mm 1) from cabinet.
   (2). Take out 1 screw (Binding head tapping 3 x 6mm 2) from cabinet.

2. TO DISMOUNT FRONT PANEL
   (1). Take out total 6 screws (Binding head tapping 3 x 8mm 3) from front panel.





(1): Binding Head Tapping Screw 4 x 8mm
(2): Binding Head Tapping Screw 3 x 6mm
(3): Binding Head Tapping Screw 3 x 8mm

(1) FM Band

- Set BAND switch in the FM position.
- * Standard modulation frequenc, 1,000Hz; frequency deviation, ±40kHz.

ADJUSTING CIRCUIT		MODE SWITCH	FREQUENCY INDICATED POSITION	INPUT CONDITION			OUTPUT CONDTION		ADJUSTING POINT	ADJUSTING PROCEDURE
				MEASURING INSTRUMENT	FREQUENCY	CONNECT. POINT	MEASURING INSTRUMENT	CONNECT. POINT		
I. F.	V-curve	OFF	Lower limit	FM sweep Generator	10.7MHz nonmodulation	TP101 (H) TP103 (E)	VTVM Oscilloscope	TP203 (H) TP205 (E)	T201	• Metch to the frequency of ceramic filter. • adjust so that the symmetrical wave form becomes the maximum.
	S-curve	OFF	Lower limit	FM sweep Generator	10.7MHz nonmodulation	TP101 (H) TP103 (E)	VTVM Oscilloscope	TP204 (H) TP205 (E)	T202 (T203)	• Match to the frequency of ceramic filter. • Adjust so that the symmetrical wave form becomes the maximum. • (T203) is a reality.
Covering frequency	LOW	OFF	Lower limit	FM-SG	87.5MHz	FM antenna terminal	Digital voltmeter	TP102 (H) TP103 (E)	L104	• Adjust so that the digital voltmeter indication becomes 2.8 ± 0.2V
	HIGH	OFF	Upper limit	FM-SG	108.0MHz	FM antenna terminal	Digital voltmeter	TP102 (H) TP103 (E)	CT103	• Adjust so that the digital voltmeter indication becomes 22.5 ± 0.3V.
Tracking frequency	LOW	OFF	90.0MHz	FM-SG	90.0MHz	FM antenna terminal	VTVM Oscilloscope	Output terminal	L101 L102	• Adjust so that the output wave form becomes the maximum.
	HIGH	OFF	106.0MHz	FM-SG	106.0MHz	FM antenna terminal	VTVM Oscilloscope	Output terminal	CT101 CT102	• Adjust so that the output wave form becomes the maximum.
I. F. (distortion factor)	1	OFF	98.0MHz	FM-SG	98.0MHz 66dBμV	FM antenna terminal	Digital voltmeter	TP201 (H) TP202 (E)	T202	• Tune exactly, and adjust so that the digital voltmeter indication becomes 0 ± 50mV.
	2	OFF	98.0MHz	FM-SG	98.0MHz 66dBμV	FM antenna terminal	VTVM Oscilloscope	Output terminal	T203	• Disconnect the digital voltmeter, and minimize the distortion of both channel. • Make a minute rotation, and repeat 1 and 2.
Mute level		ON	98.0MHz	FM-SG	98.0MHz 23dBμV	FM antenna terminal	VTVM Oscilloscope	Output terminal	SVR201	• Adjust so that the sound comes out under the silent state.
Signal meter		OFF	98.0MHz	FM-SG	98.0MHz 50dBμV	FM antenna terminal	Set proper		SVR202	• Adjust so that the " 3 " LED for signal lights up.
VCO (19kHz)		ON	Where signal is absent	FM-SG	60dBμV (nonmodulation)	FM antenna terminal	VTVM Oscilloscope Counter	TP301 (H) TP302 (E)	SVR302	• Tune exactly, and adjust so that the counter value becomes 19.00 ± 0.03kHz
Separation		ON	98.0MHz	FM-SG	98.0MHz 66dBμV	FM antenna terminal	VTVM Oscilloscope	Output terminal	SVR301	• Adjust so that the leakage currents of the right and left channels are minimized in good balance.

NOTE—1: The Re input level value listed above (dBμV) refers to the value of output scale when the SG of the open scale type is connected to the set proper with 75 ohm direct.

NOTE—2: If a sweeps generator is unavailable for adjustment, tune the set exactly to SG after executing the tracking frequency, I. F. frequency center, VCO and separation adjustments. Then, the position at which separation of 1 kHz is maximuzed nearly coincided with the V-caurve adjusted positions of T201.

NOTE—3: Do not turn T201 indiscreetly because the accurate adjusting position may not be achieved by method of adjusting T201 according to the distortion factor as the detecting distortion and MPX—IC distortion have an effect upon each other if the distortion of TC301 (MPX) is not good.

NOTE—4: In I. F. frequency center adjustment, connect a 10k ohm resistor between TP201/TP202 and the digital voltmeter (for prupose of preventing the I. F. output leakage).

NOTE—5: In the separation adjustment, set the pilot signal to ±6kHz dev.

NOTE—6: FTZ FM coverage frequency measuring method:
Modulate FM SG in 1000 Hz, ±4kHz dev., and feed the input signal into the 75 ohm ANT terminal at 60 dBμv. In the vicinity of LOW side (or HIGH side), determine the reference level (AF output), and vary the SG from outside the receiving band range of the set at every frequency steps of the set.
Continue varying until a frequency point comes to decline from the reference output level determined in the beginning- - this point is the coverage frequency of the set.

(2) MW Band

- Set BAND switch in the MW position.
- * Standard modulation frequency, 1,000Hz; percentage 30% modulation.

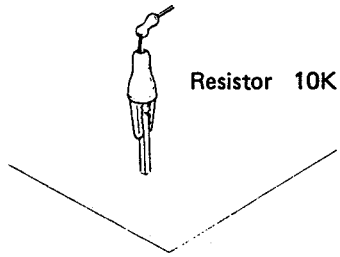
ADJUSTING CIRCUIT		MODE SWITCH	FREQUENCY INDICATED POSITION	INPUT CONDITION			OUTPUT CONDTION		ADJUSTING POINT	ADJUSTING PROCEDURE
				MEASURING INSTRUMENT	FREQUENCY	CONNECT. POINT	MEASURING INSTRUMENT	CONNECT. POINT		
I. F.		OFF	Lower limit	AM sweep Generator	450KHz nonmodula-tion	TP153 (H) TP103 (E)	VTVM Oscilloscope	TP151 (H) TP152 (E)	T251 T252	• Match to the frequency of ceramic filter. • Adjust so that the symmetrical wave form becomes the maximum.
Covering frequency	LOW	OFF	Lower limit	AM-SG	522kHz	AM loop antenna	Digital voltmeter	TP154 (H) TP205 (E)	L153	• Adjust so that the digital voltmeter indication becomes 2.2 ± 0.1V.
	HIGH	OFF	Upper limit	AM-SG	1611kHz	AM loop antenna	Digital voltmeter	TP154 (H) TP205 (E)	CT152	• Adjust so that the digital voltmeter indication becomes 22.5 ± 0.3V.
Tracking frequency	LOW	OFF	603kHz	AM-SG	603kHz	AM loop antenna	VTVM Oscilloscope	Output terminal	L152	• Adjust so that the output value becomes the maximum.
	HIGH	OFF	1404kHz	AM-SG	1404kHz	AM loop antenna	VTVM Oscilloscope	Output terminal	CT151	• Adjust so that the output value becomes the maximum.
Signal meter		OFF	999kHz	AM-SG	999kHz 100dBμV	AM loop antenna	Set proper		SVR251	• Adjust so that the " 3 " LED for signal lights up.

(3) LW Band

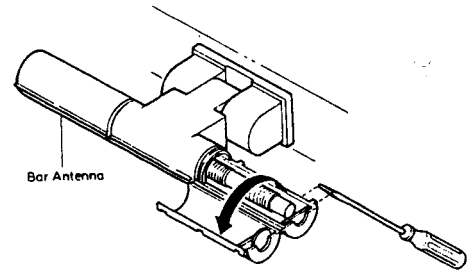
- Set BAND switch in the LW position.

ADJUSTING CIRCUIT		MODE SWITCH	FREQUENCY INDICATED POSITION	INPUT CONDITION			OUTPUT CONDTION		ADJUSTING POINT	ADJUSTING PROCEDURE
				MEASURING INSTRUMENT	FREQUENCY	CONNECT. POINT	MEASURING INSTRUMENT	CONNECT. POINT		
Covering frequency	LOW	OFF	Lower limit	AM-SG	153kHz	AM loop antenna	Digital voltmeter	TP154 (H) TP205 (E)	L155	• Adjust so that the digital voltmeter indication becomes 2.8 ± 0.1V.
	HIGH	OFF	Upper limit	AM-SG	360kHz	AM loop antenna	Digital voltmeter	TP154 (H) TP205 (E)	CT154	• Adjust so that the digital voltmeter indication becomes 22.5 ± 0.3V.
Tracking frequency	LOW	OFF	160kHz	AM-SG	160kHz	AM loop antenna	VTVM Oscilloscope	Output terminal	L154	• Adjust so that the output value becomes the maximum.
	HIGH	OFF	340kHz	AM-SG	340kHz	AM loop antenna	VTVM Oscilloscope	Output terminal	CT153	• Adjust so that the output value becomes the maximum.

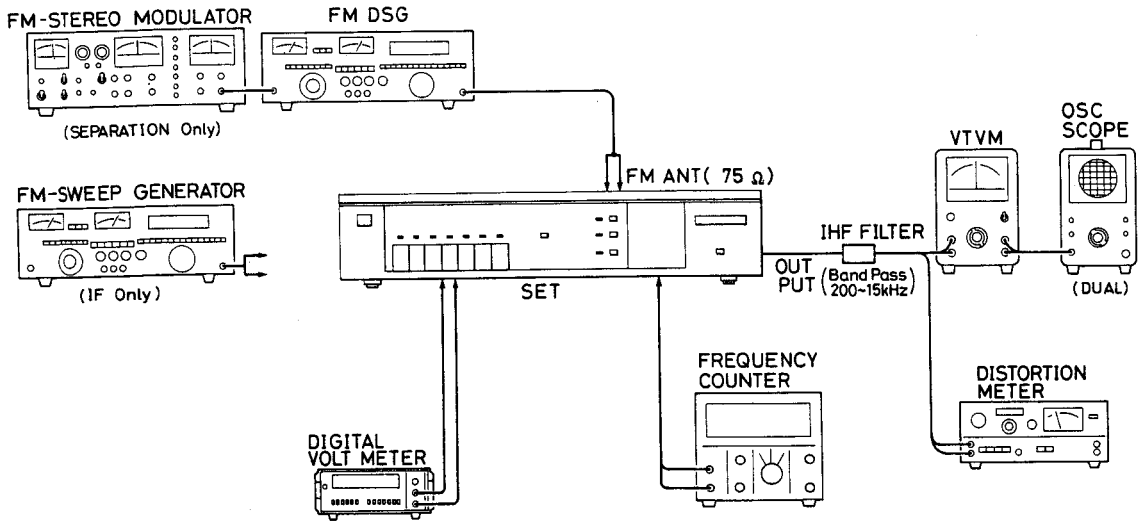
ADJUSTMENT



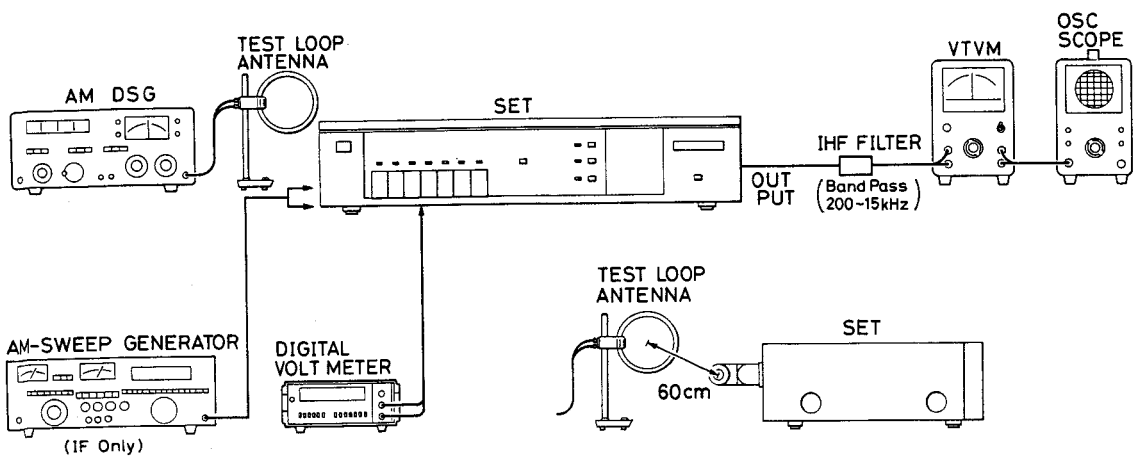
Removal of antenna cover



FM ADJUSTMENT CONNECTIONS

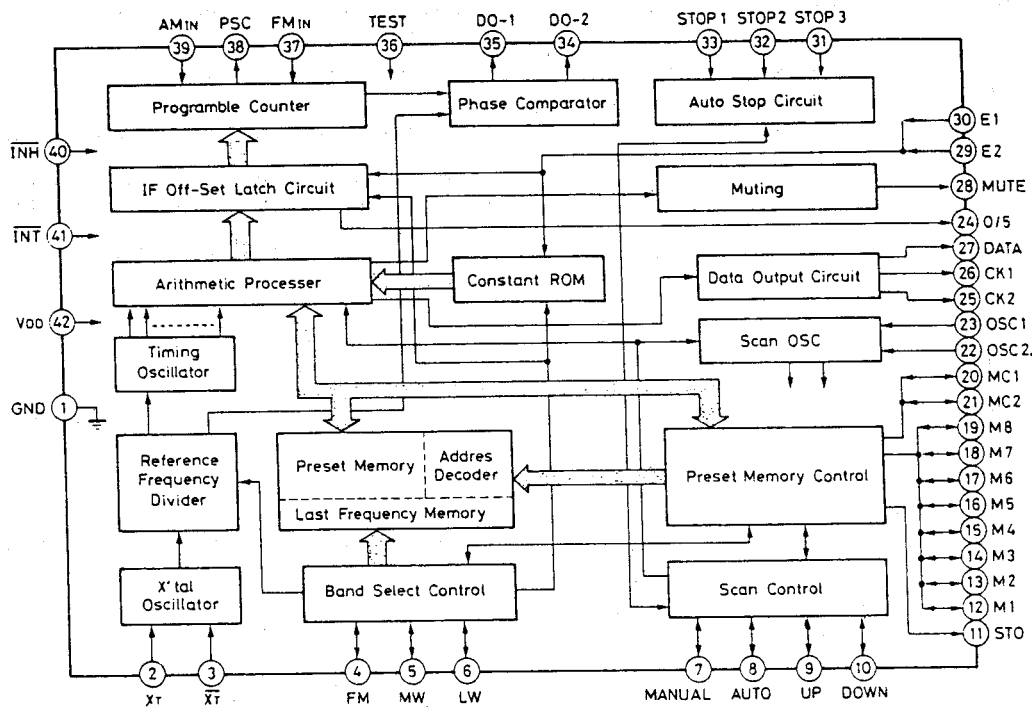


AM ADJUSTMENT CONNECTIONS



IC BLOCK DIAGRAM

TC9147 (DIGITAL TUNING SYSTEM)



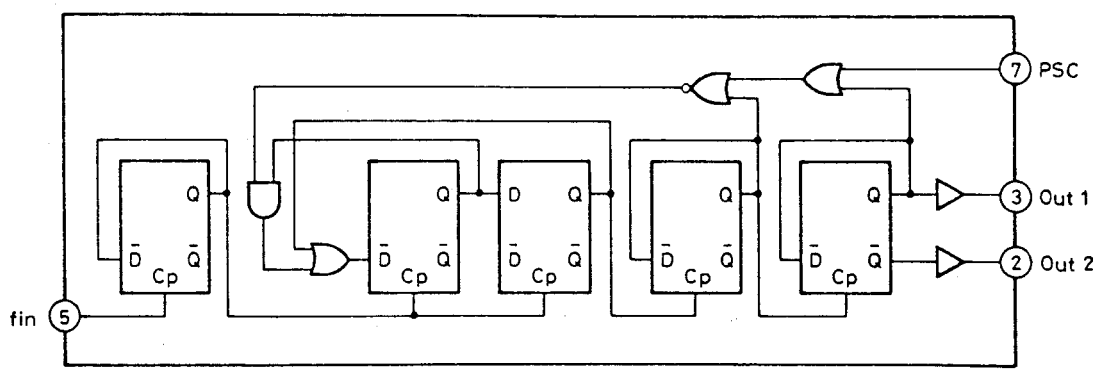
FUNCTIONAL DESCRIPTION OF RESPECTIVE TERMINALS

No.	SYMBOL	DESIGNATION	FUNCTIONAL DESCRIPTION
1	GND	Line impressing terminal	Grounding
2,3	XT • XT	Crystal oscillator terminal	To connect 7.2MHz crystal for reference frequency
4 5 6	FM MW LW	FM band assignment input MW band assignment input LW band assignment input	To change over each of FM/MW/LW band by the mutually reset type
7 8	MANUAL AUTO	Manual tuning mode Auto-search tuning mode	To change over mode of manual operation and Auto-search operation in UP/DOWN chanel selection by the mutually reset type
9 10	UP DOWN	UP operation key input DOWN operation key input	To perform UP/DOWN channel selection by connecting the push key
11	STO	Memory store order input	To set the preset memory in the store state
12 ~ 19	M1 ~ M8	Preset memory channel assignment inputs	To perform storing and read-out of the internal 16-chanel preset memory in combination with MC1, MC2 and STO inputs
20 ~ 21	MC1 ~ MC2	Memory control inputs	To set the preset memory in either the FM/AM (MW + LW) respective 8-channel fixed memory or FM + MW + LW 3-band, 16-channel random memory
22	OSC2	AM oscillator terminal	CR connecting terminal of an oscillator to determine the scanning speed of Auto-search in AM
23	OSC1	FM oscillator terminal	CR connecting terminal of an oscillator to determine the scanning speed of Auto-search in FM
24	0/5	FM 50kHz signal output	To indicate 50kHz step of FM band in the European region. " H " level by 50kHz.
25 26 27	CK2 CK1 DATA	Receiving frequency data serial output	To output the serial data and timing lock to driver TD6301 for frequency display. CK1 output adopts "pee" tone output.

IC BLOCK DIAGRAM

No.	SYMBOL	DESIGNATION	FUNCTIONAL DESCRIPTION
28	MUTE	Muting signal output	To assume the " H " level in muting output
29 30	E1 E2	Regional assignment inputs	To designate Japanese/U. S. A. /European region
31	STOP3	AM IF signal input	To count IF 450kHz in AM and then to stop Auto-search
32	STOP2	Auto-search stop signal	To stop Auto-search when the " H " level is input under the condition that the " H " level is given to STOP1 input.
33	STOP1	Scanning speed slow input	To decelerate the scanning speed of Auto-search to 1/2 when the " H " level is input.
34 35	DO–2 DO–1	Phase comparator output	To output two try state buffers in parallel from one phase comparator
36	TEST	Test terminal	To set the test mode on when the " H " level is input.
37	FM in	Programmer blue counter input	To connect the output of pre-scaler TD6104.
38	PSC	Pre-scaler control output	To control on changing-over of 1/30 and 1/32 frequency dividing of pre-scaler TD6104.
39	AM in	Programmer blue counter input	To input an AM station transmitting signal
40	$\overline{INH}$	Inhibit input	To assume the normal operating state at the " H " level and the inhibit state at the " L " level.
41	$\overline{INT}$	Initialize input	To assume the normal operating state at the " H " level and to initialize the internal state at the " L " state.
42	VDD	Line impressing terminal	To impress 5 ± 0.5V. Back-up possible up to 2V.

TD6104 (FM PRE-SCALER)



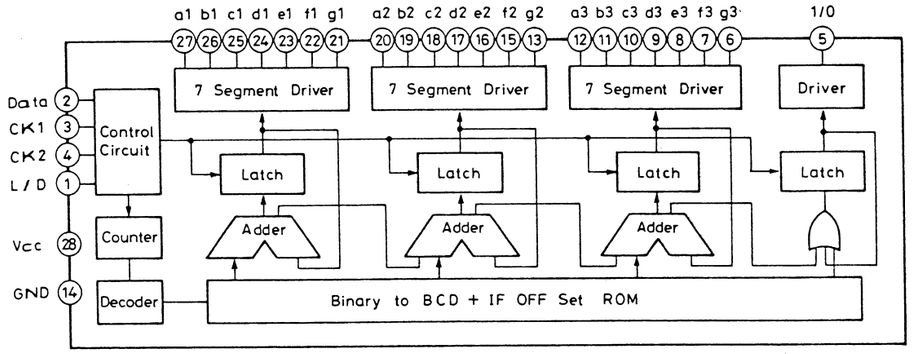
FUNCTIONAL DESCRIPTION OF RESPECTIVE TERMINALS

TERMINAL No.	DESIGNATION	FUNCTIONAL DESCRIPTION
5	fin	Input terminal of a FM station transmitting signal Frequency range: 60 ~ 140 MHz Input level: 75 ~ 300 mVrps
3	OUT–1	Output frequency divded of input signal from frequency dividing terminal fin to 1/30 or 1/32. Output level: 0.5V (MIN)

IC BLOCK DIAGRAM

2	OUT–2	Inverted signal output of OUT–1. Requires an external resistor when used for the open emitter system. Normally opened.
7	PSC	Frequency dividing change-over control terminal. 1/32 at Vpsc. of greater than 2V. 1/30 at Vpsc. of greater than 1V.
6	C	Pass capacitor external terminal of bias (control) circuit To connect C of about 2,200 pF between it and GND.
1 4	Vcc GND	Line terminal Vcc = 5V Icc = 5mA (TPY) • 10mA (MAX)

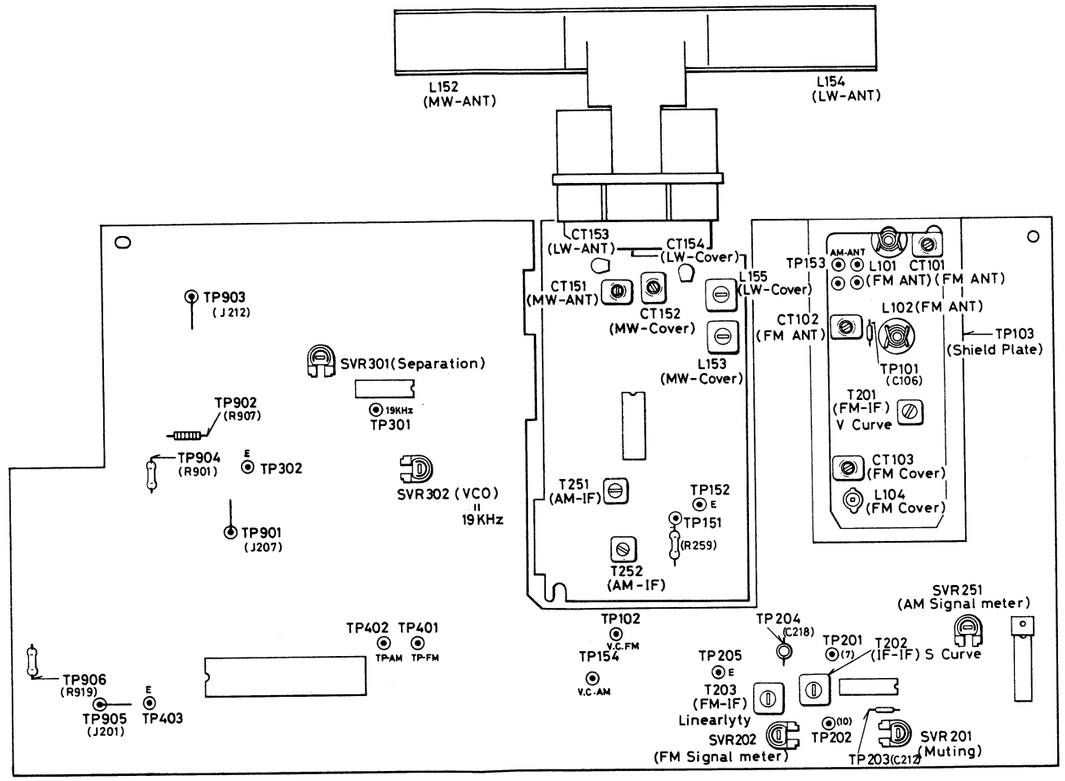
TD6301 (DIGITAL INDICATOR DRIVER)

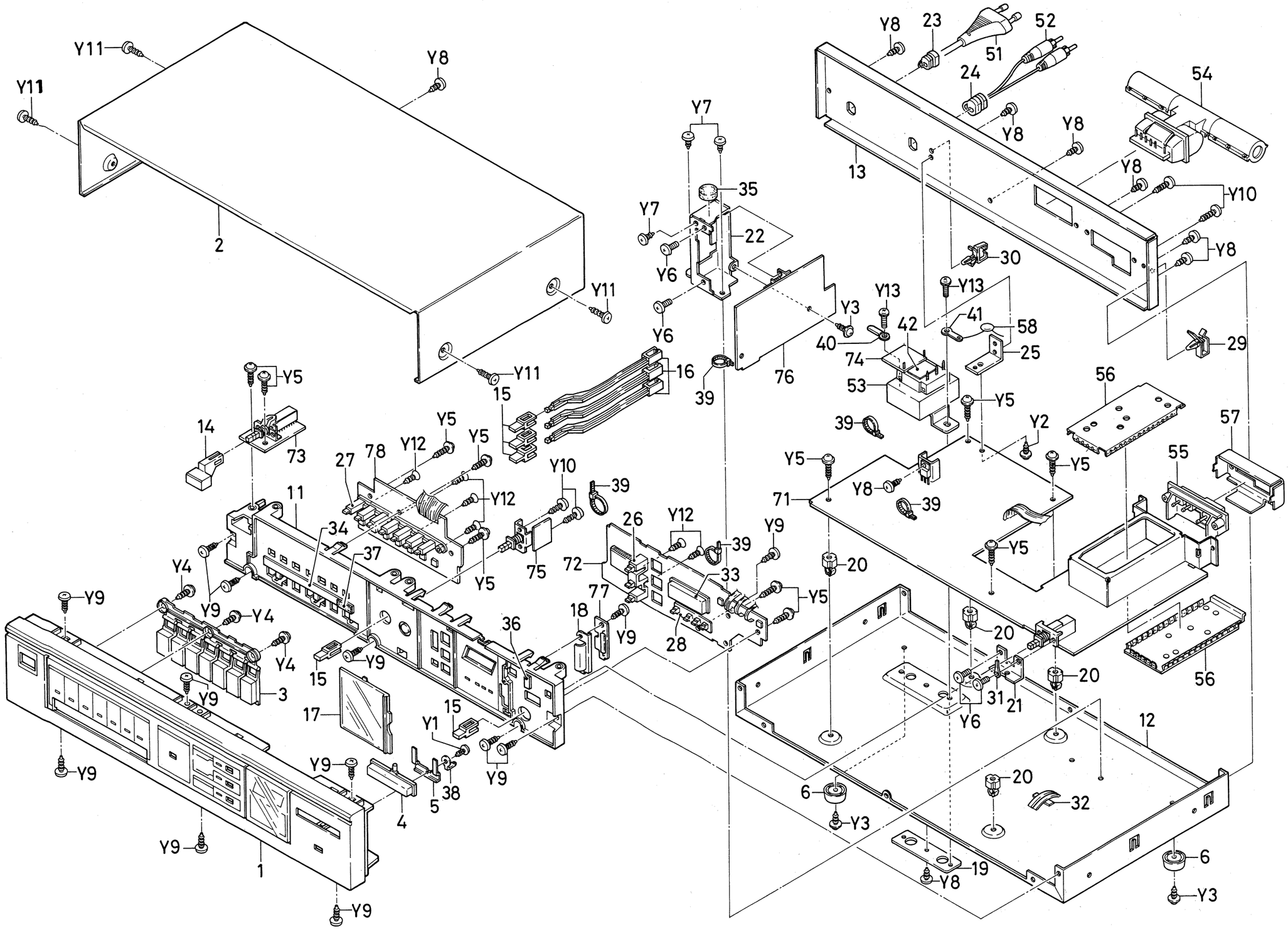


FUNCTIONAL DESCRIPTION OF RESPECTIVE TERMINALS

TERMINAL No.	DESIGNATION	FUNCTIONAL DESCRIPTION
1	L/D	Output state change-over terminal. Input terminal for changing over the output state according to indicators (LED, FL, LCD).
2	Data	Receiving frequency data input terminal. To be input serially from system controller TC–9147.
3 • 4	CK1 • CK2	Receiving frequency data input control timing input terminal. To be transfered simultaneously with data from system controller TC–9147.
5	1/0	Segment drive output terminal. To indicate a digit of 100 MHz in FM and a digit of 1000kHz in AM. Output is only one pin because either 1 or 0 for FM and AM.
6 ~ 12	a3 ~ g3	7-segment drive output terminals. To indicate a digit of 10 MHz in FM and a digit of 100 kHz in AM.
13 • 15 ~ 20	a2 ~ g2	7-segment drive output terminals. To indicate a digit of 1 MHz in FM and a digit of 10 kHz in AM.
21 ~ 27	a1 ~ g1	7-segment drive output terminals. To indicate a digit of 100 kHz in FM and a digit of 1 kHz in AM.
14 • 28	Vcc • GND	Line voltage impressing terminals

PARTS LOCATION




Y11
Y11
Y8
2
Y11
Y11
Y5
14
73
Y5
Y12
Y5
27
78
11
34
37
Y4
Y9
Y4
Y4
Y9
3
Y9
Y9
Y9
17
15
Y9
Y9
Y1
15
Y9
5
38
4
Y9
1
Y9
Y10
39
Y12
75
Y5
36
18
Y9
77
26
Y12
39
72
33
28
Y9
Y5
Y7
35
Y7
22
Y6
Y6
16
39
15
76
Y3
Y13
40
42
74
53
39
Y5
Y8
39
71
Y5
Y5
Y2
Y5
Y8
23
52
51
24
54
13
Y8
Y8
Y8
Y10
Y8
30
Y13
41
58
25
29
56
57
55
Y5
20
Y5
56
20
20
31
21
Y6
12
20
32
6
Y3
19
Y8
6
Y3

PARTS LIST

Ref. No.	Part No.	Description	Q'ty
PACKING & ACCESSORY			
	141-6-133T-42402	Individual Carton	1
	141-6-144T-85000	Foam Plastic Case	2
	141-6-331T-11600	Protector Sheet, Set	1
	141-6-231T-35600	Inner Polye Cover, Set	1
	141-6-231T-25350	Inner Polye Cover. Inst. M.	1
	141-6-410T-86202	Instruction Manual	1
	4-245T-00700	Antenna	1
	141-6-415T-23500	Notice, Norway	1
	141-6-415T-32301	Notice, New FTZ	1
CABINET & CHASSIS			
1	141-0-122T-46601	Front Panel Ass'y	1
2	141-2-111T-54900	Cabinet	1
3	141-0-160T-17000	Push Button Ass'y	1
4	141-2-160T-17100	Push Button, UP DOWN	1
5	141-2-853T-80700	Spring Plate	1
6	141-2-174T-11200	Stand	2
11	141-2-221T-10500	Bracket Panel	1
12	141-2-125T-29800	Bottom Lid	1
13	141-2-126T-41402	Back Lid	1
14	141-2-160T-16500	Push Button, Power Switch	1
15	141-2-160T-09700	Push Button, Switch	5
16	141-2-253T-18700	Joint, Band Switch	3
17	141-2-143T-93000	Marking Plate	1
18	141-2-329T-08700	Reflector	1
19	141-2-411T-13700	Plate Nut	1
20	141-2-210T-08900	Bracket, PCB	4
21	141-2-310T-80400	Bracket, Auto Main Switch	1
22	141-2-310T-80500	Bracket, Band Switch	1
23	141-2-464T-14400	Fixer, AC Cord	1
24	141-2-464T-14400	Fixer, Output	1
25	141-2-310T-30500	Bracket, PCB	1
26	141-2-210T-45100	Bracket Band, LED	1
27	141-2-210T-45200	Bracket Preset, LED	1
28	141-2-352T-59900	Spacer, LED	1
29	141-2-464T-39500	Fixer, Back Lid	1
30	141-2-464T-29900	Fixer, Back Lid	1
31	141-2-472T-05700	Lug, Tuning Select	1
32	141-2-246T-40801	Sheet, Botom Lid	1
33	141-2-247T-12400	Sheet, 10 x 35 x 1.5t	1
34	141-2-447T-60400	Cushion, Blacket Pannel	1
35	141-2-447T-62801	Cushion, Band Switch	1
36	141-2-447T-00801	Cushion, Blacket Pannel	1
37	141-2-447T-95201	Cushion, Blacket Pannel	1
38	123-2-472R-00400	Lug, Blacket	1
39	141-2-464T-20600	Fixer, Lead	5
40	123-2-472R-00601	Lug	1
41	123-2-472R-00600	Lug	1
42	141-6-479T-50700	Label	1
FIXING PARTS			
Y 1		Pan. Hd. Tapping Screw 2.6 x 6mm	1
Y 2		Pan. Hd. Tapping Screw W/Washer 2.6 x 6mm	1
Y 3		Pan. Hd. Tapping Screw W/Washer 3 x 6mm	3
Y 4		Pan. Hd. Tapping Screw W/Washer 3 x 8mm	3
Y 5		Pan. Hd. Tapping Screw W/Washer 3 x 10mm	11
Y 6		Binding Hd. Screw 3 x 4mm	4
Y 7		Binding Hd. Tapping Screw 3 x 4mm	3
Y 8		Binding Hd. Tapping Screw 3 x 6mm	9
Y 9		Binding Hd. Tapping Screw 3 x 8mm	13
Y10		Binding Hd. Tapping Screw 3 x 10mm	4
Y11		Binding Hd. Tapping Screw 4 x 8mm	4
Y12		Flat Hd. Tapping Screw 2.6 x 8mm	5
Y13		Pan. Hd. Screw W/Spring Washer 4 x 6mm	2

Ref. No.	Part No.	Description	Q'ty
ELECTRICAL PARTS			
51	4-243T-84972	Power Cord	1
52	4-243T-19781	Lead Cord	1
53	4-300T-60200	Power Transformer	1
54	4-257T-51801	Antenna Coil Ass'y, MW—LW	1
55	141-2-382T-20271	Terminal	1
56	141-2-322T-73700	Shield Plate	2
57	141-2-322T-73500	Shield Plate	1
58(C920)		Ceramic 100pF ±10% 50V	1
TUNER (MAIN) P. C. B. ASS'Y			
71	141-4-250T-65201	P.C.B. Ass'y, Tuner (Main)	1
S5	4-238T-39400	Switch	1
	141-2-368T-18700	Heat Sink	1
	141-2-322T-73600	Shield Plate	1
X401	4-225T-03500	Crystal	1
L101	4-265T-58830	V H F Coil	1
L102	4-265T-58730	V H F Coil	1
L104	4-265T-57244	V H F Coil	1
L301,302	4-265R-12600	V H F Coil	2
L103	4-253T-15014	Filter	1
L156	4-253T-15020	Filter	1
L401,402	4-253T-15020	Filter	2
T201	4-256T-23030	I. F. T	1
T202	4-256T-26500	I. F. T	1
T203	4-256T-26600	I. F. T	1
LPF201	4-255T-04400	MX Coil	1
CF201, 202,203	4-256T-84500	I. F Filter	3
CT101,102	4-224R-11600	Trimmer	2
CT103	4-224T-08800	Trimmer	1
SVR201	4-222T-97576	Semi-Variable Resistor 20K ohm	1
SVR201	4-222T-97577	Semi-Variable Resistor 50K ohm	1
SVR251	4-222T-97575	Semi-Variable Resistor 10K ohm	1
SVR301	4-222T-97572	Semi-Variable Resistor 1K ohm	1
SVR302	4-222T-97574	Semi-Variable Resistor 5K ohm	1
R450 ~ 462	4-221T-05500	Resistor	1
CV101,102, 103		Varactor Diode SVC211 B	3
D901,902		Diode DS18	2
D903,904		Diode DS17	2
D905,906		Diode DS135 E	2
D907		Zener Diode GZA27Z	1
D911		Diode DS135 E	1
D201,301, 202,203		Diode DS442 X	4
D351,908, 909		Diode DS442 X	3
D401,402, 403,404, 405,406		Diode DS442 X	6
D407,408		Diode DS442 X	2
D910		Diode DS442 X	1
IC201		IC LA1231N	1
IC301		IC LA3350 SS	1
IC404		IC LB1426	1
IC401		IC TD6104P	1
IC402		IC TC9147P	1
IC901		IC L78M12S	1
Q101		FET 3SK73 Green	1
Q102		Transistors 2SC535	1
Q103		Transistors 2SC930 CONV	1
Q104		Transistors 2SC535	1
Q201		Transistors 2SC930 iF	1
Q105		FET 2K212	1
Q301		Transistors 2SC536 AUD	1
Q302,304		Transistors 2SC536 AUD	2
Q303,305		Transistors 2SD1012	2
Q151		Transistors 2SC1571	1
Q402		FET 2SK222	1
Q403		Transistors 2SC1571	1
Q408		FET 2SK222	1
Q409		Transistors 2SC1571	1
Q410,411		Transistors 2SC536 AUD	2
Q404		Transistors 2SC536 AUD	1
Q405,406		Transistors 2SC930	2

ARTS LIST

Ref. No.	Part No.	Description	Q'ty
TUNER (MAIN) P. C. B. ASS'Y			
Q407		Transistors 2SC536 AUD	1
Q401		Transistors 2SC535	1
Q905		Transistors 2SD438	1
Q903		Transistors 2SA608	1
Q904		Transistors 2SC536 AUD	1
Q902		Transistors 2SC536 AUD	1
Q901		Transistors 2SC536K AUD	1
Q352		Transistors 2SA608	1
Q351		Transistors 2SC536 AUD	1
Q353		Transistors 2SC536 AUD	1
	RESISTORS All Resistors are Carbon T-type ±5% ¼W, unless otherwise noted.		
R101,109, 114		10K ohm	3
R102		100K ohm	1
R103		10 ohm	1
R104		150 ohm	1
R105		5.6K ohm	1
R106		1K ohm	1
R107		33K ohm	1
R111		22K ohm	1
R110		220K ohm	1
R113		2.2K ohm	1
R115		18K ohm	1
R116		12K ohm	1
R117		2.7K ohm	1
R120		1K ohm	1
R118		330K ohm	1
R112		150 ohm	1
R123		8.2K ohm	1
R108		150 ohm	1
R119		100 ohm	1
R121		3.3K ohm	1
R122		10 ohm	1
R124		330 ohm	1
R125		10 ohm	1
R126		100K ohm	1
R130		150 ohm	1
R201		1K ohm	1
R205		18K ohm	1
R203		2.7K ohm	1
R204,225		330 ohm	2
R206		330 ohm	1
R207		56K ohm	1
R208		22K ohm	1
R210		2.2K ohm	1
R211		22K ohm	1
R212		3.3K ohm	1
R213		100K ohm	1
R214		10K ohm	1
R215		22K ohm	1
R216		2.2K ohm	1
R202		12K ohm	1
R209		18K ohm	1
R217		Solid 82 ohm ½W	1
R219		56K ohm	1
R218		100K ohm	1
R220		15K ohm	1
R223		22K ohm	1
R150,155, 162,158		1K ohm	4
R157		10K ohm	1
R159		15K ohm	1
R160		56K ohm	1
R161		3.3K ohm	1
R152		330 ohm	1
R224		56K ohm	1
R226		56K ohm	1
R301		Solid 82 ohm ½W	1
R304		2.2K ohm	1
R305		3.3K ohm	1
R306		10K ohm	1
R307		100K ohm	1
R308		8.2K ohm	1
R309		10K ohm	1

Ref. No.	Part No.	Description	Q'ty
TUNER (MAIN) P. C. B. ASS'Y			
	RESISTORS		
R302,303		4.7K ohm	2
R330,340		8.2K ohm	2
R331,341		8.2K ohm	2
R332,342		820K ohm	2
R333,343		4.7K ohm	2
R335,345		100K ohm	2
R334,344		270 ohm	2
R337,347		3.3K ohm	2
R351		100K ohm	1
R352		33K ohm	1
R353		82K ohm	1
R354		100K ohm	1
R355		270 ohm	1
R909		56K ohm	1
R908		10K ohm	1
R910		100K ohm	1
R911		3.3M ohm	1
R912		1M ohm	1
R913		22K ohm	1
R914		47K ohm	1
R915		820K ohm	1
R916		100K ohm	1
R418		680 ohm	1
R419		470 ohm	1
R420		10K ohm	1
R421		15K ohm	1
R422		8.2K ohm	1
R423		10K ohm	1
R424		560 ohm	1
R425,426		5.6K ohm	2
R427		1K ohm	1
R428		5.6K ohm	1
R429 ,431		8.2K ohm	2
R430,432		5.6K ohm	2
R435		56K ohm	1
R436		82K ohm	1
R463,464, 465		1K ohm	3
R437		33K ohm	1
R401		330 ohm	1
R402		10 ohm	1
R403		330K ohm	1
R404		1.5K ohm	1
R405		120K ohm	1
R406		220K ohm	1
R407		82K ohm	1
R408		150K ohm	1
R409		6.8K ohm	1
R410		8.2K ohm	1
R411,412		15K ohm	1
R413		1K ohm	1
R414		100 ohm	1
R415		3.3K ohm	1
R416		15K ohm	1
R480		15K ohm	1
R481		18K ohm	1
R482		22K ohm	1
R483,484, 485		56 ohm	3
R486		Solid 100 ohm ½W	1
R487		330K ohm	1
R901		FP-Carbon 2.2 ohm	1
R902		15K ohm	1
R903		1.5K ohm	1
R904		680 ohm	1
R905		1K ohm	1
R906		1.2K ohm	1
R907		Solid 100 ohm ½W	1
R919		1K ohm ½W	1
R921		10K ohm	1
R922		22K ohm	1
R917		8.2 ohm	1
R442,443, 444,446		100K ohm	4
R445		15K ohm	1
R440,441		15K ohm	1
R439		1K ohm	1
R438		100 ohm	1
R447		15K ohm	1

PARTS LIST

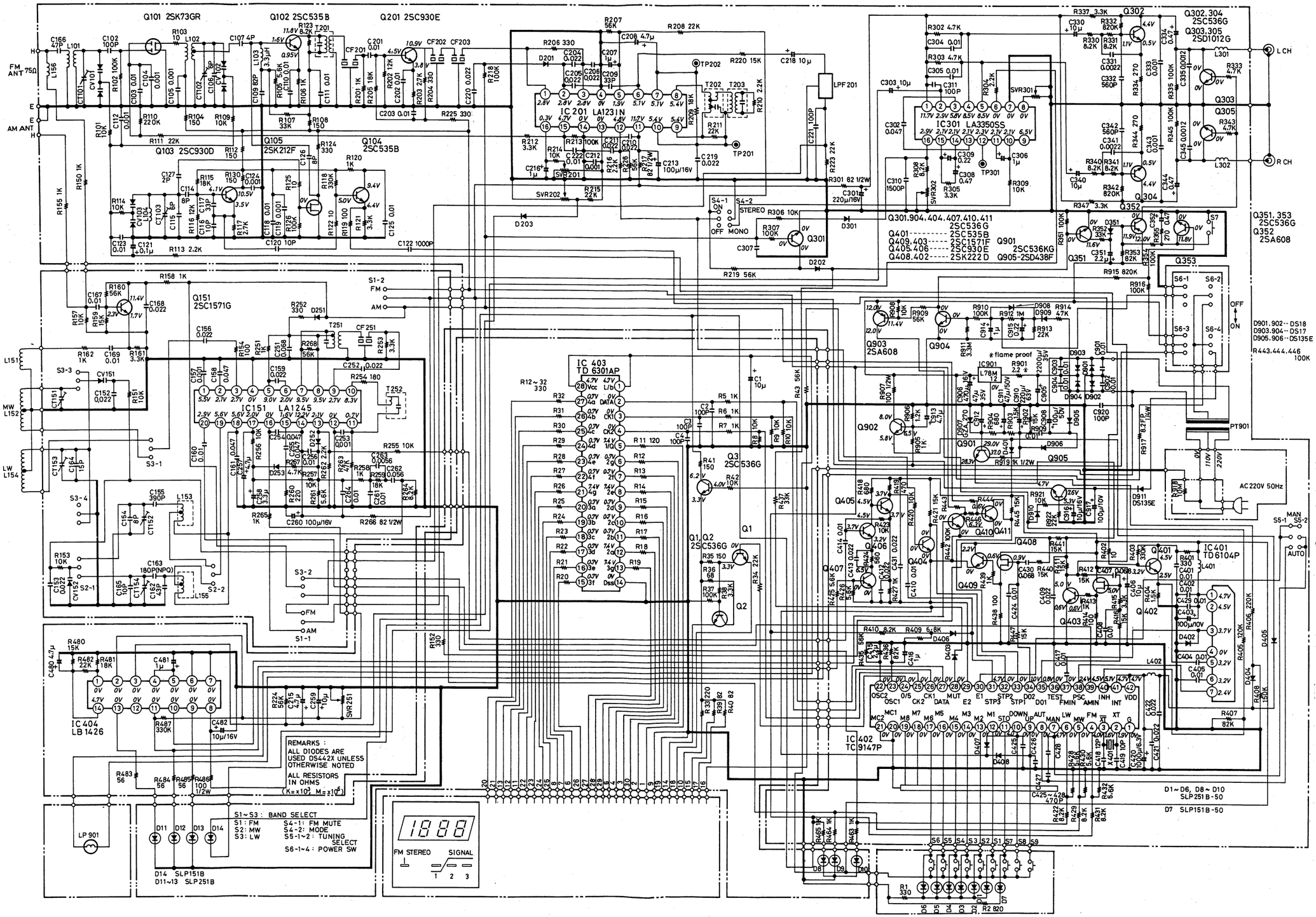
Ref. No.	Part No.	Description	Q'ty
TUNER (MAIN) P. C. B. ASS'Y			
	CAPACITORS		
C167,169		BC Con 0.01μF ±10% 25V	2
C168		BC Con 0.022μF ±10% 25V	1
C480		Electrolytic 4.7μF 35V	1
C481		Electrolytic 1μF 50V	1
C482		Electrolytic 10μF 16V	1
C905		Electrolytic 2200μF 35V	1
C908		Electrolytic 100μF 50V	1
C910		Electrolytic 220μF 63V	1
C911		Electrolytic 47μF 50V	1
C912		Electrolytic 47μF 35V	1
C913		Electrolytic 4.7μF 35V	1
C906		Electrolytic 470μF 16V	1
C901,902, 903,904		Ceramic 0.01μF +80–20% 50V	4
C909		Ceramic 0.01μF +80–20% 50V	1
C352		Electrolytic 0.47μF 50V	1
C351		Electrolytic 2.2μF 50V	1
C915		Electrolytic 0.22μF 50V	1
C914		Electrolytic 1μF 50V	1
C916		Electrolytic 10μF 16V	1
C917		Electrolytic 100μF 10V	1
C102		Ceramic 100pF ±10% 50V	1
C103		Ceramic 0.01μF +80–20% 50V	1
C104		Ceramic 0.001μF ±10% 50V	1
C105		Ceramic 0.001μF ±10% 50V	1
C106		Ceramic 6pF ±0.25pF 50V	1
C107		Ceramic 4pF ±0.25pF (NPO) 50V	1
C109		Ceramic 82pF ±10% 50V	1
C110,111		Ceramic 0.01μF +80–20% 50V	2
C112		Ceramic 0.001μF ±10% 50V	1
C114		Ceramic 8pF ±0.25pF (NPO) 50V	1
C115		Ceramic 6pF ±0.25pF (N750) 50V	1
C116		Ceramic 10pF ±0.25pF (NPO) 50V	1
C117		Ceramic 33pF ±5% (NPO) 50V	1
C118		Ceramic 0.01μF +80–20% 50V	1
C119		Ceramic 0.001μF ±10% 50V	1
C166		Ceramic 47pF ±10% 50V	1
C120		Ceramic 10pF ±0.5pF (NPO) 50V	1
C121		Electrolytic 0.1μF 50V	1
C122		Ceramic 0.001μF ±10% 50V	1
C201,202, 203		Ceramic 0.01μF +80–20% 50V	3
C204,205, 206		Ceramic 0.022μF +80–20%	3
C209		Ceramic 33pF ±10% 50V	1
C208		Electrolytic 4.7μF 35V	1
C207		Electrolytic 1μF 50V	1
C218		Electrolytic 10μF 16V	1
C127		Ceramic 2pF ±0.25pF (NPO) 50V	1
C126		Ceramic 8pF ±0.25pF (NPO) 50V	1
C125		Ceramic 0.01μF +80–20% 50V	1
C123		Ceramic 0.001μF ±10% 50V	1
C124		Ceramic 0.01μF +80–20% 50V	1
C210,211		Ceramic 0.022μF +80–20% 50V	2
C219		Ceramic 0.022μF +80–20% 50V	1
C220		Ceramic 0.022μF +80–20% 50V	1
C212		Ceramic 0.001μF ±10% 50V	1
C213		Electrolytic 100μF 16V	1
C215		Electrolytic 4.7μF 35V	1
C216		Electrolytic 1μF 50V	1
C221		Ceramic 100pF ±10% 50V	1
C222		Ceramic 0.01μF +80–20% 50V	1
C259		Electrolytic 10μF 16V	1
C301		Electrolytic 220μF 16V	1
C303		Electrolytic 10μF 16V	1
C330,340		Electrolytic 10μF 16V	2
C334,344		Electrolytic 0.47μF 50V	2
C309		Electrolytic 0.22μF 50V	1
C308		Electrolytic 0.47μF 50V	1
C306		Electrolytic 1μF 50V	1
C304,305		BC Con 0.01μF ±10% 25V	2
C302		BC Con 0.047μF ±10% 25V	1
C310		P P Con 1500pF ±5% 100V	1
C307		Ceramic 0.022μF +80–20% 50V	1
C332,342		Ceramic 560pF ±10% 50V	2
C331,341		BC Con 0.0022μF ±10% 25V	2
C335,345		BC Con 0.0022μF ±10% 25V	2
C333,343, C311		BC Con 0.001μF ±10% 25V	2
		Ceramic 100pF ±10% 50V	1
C410,414		BC Con 0.01μF ±10% 25V	2
C412,413		BC Con 0.022μF ±10% 25V	2
C401,404		Ceramic 0.01μF +80–20% 50V	2
C402,408, 417		Ceramic 0.01μF +80–20% 50V	3
C405		Ceramic 0.01μF +80–20% 50V	1
C407		BC Con 0.068μF ±10% 25V	1
C409		Ceramic 0.022μF +80–20% 50V	1
C403		Electrolytic 100μF 10V	1
C406		Electrolytic 10μF 16V	1
C415		Electrolytic 2.2μF 50V	1
C416		Electrolytic 1μF 50V	1
C420		Electrolytic 1000μF 6.3V	1
C429		Ceramic 0.01μF +80–20% 50V	1
C421,422		Ceramic 0.022μF +80–20% 50V	2
C425,426, 427,428		Ceramic 470pF ±10% 50V	4
C419		Ceramic 10pF ±0.25pF (NPO) 50V	1
C418		Ceramic 12pF ±0.25pF (NPO) 50V	1
C430		BC Con 0.068μF ±10% 25V	1
C424		Ceramic 0.01μF +80–20% 50V	1
C431		BC Con 0.022μF ±10% 25V	1
DISPLAY P. C. B. ASS'Y			
72	141-4-250T-65301	P.C.B. Ass'y, Frequency Display	1
		LED SL-2557K Green	1
D14		LED SLP151B Red	1
D8,9,10		LED SLP251B50 Green	3
D11,12,13		LED SLP251B Green	3
IC403		IC TD6301AP	1
Q1,2,3		Transistors 2SC536 AUD	3
	RESISTORS		
R42		10K ohm	1
R5,6,7		1K ohm	3
R8,9,10		10K ohm	3
R12,13,14, 15,16		330 ohm	5
R17,18,19, 20,21,22		330 ohm	6
R23,24,25, 26,27,28		330 ohm	6
R29,30, 31,32		330 ohm	4
R11		120 ohm	1
R35		150 ohm	1
R41		150 ohm	1
R33		220 ohm	1
R43		56K ohm	1
R34		22K ohm	1
R37		100K ohm	1
R38		3.3K ohm	1
R39,40		82 ohm	2
R36		68 ohm	1
	CAPACITORS		
C1		Electrolytic 10μF 50V	1
C2,3,4		Ceramic 100pF ±10% 50V	3
POWER SWITCH P. C. B. ASS'Y			
73	141-4-250T-65401	P.C.B. Ass'y, Power Switch	1
S6-1-4	4-238T-35000	Push Switch	1

PARTS LIST

Ref. No.	Part No.	Description	Q'ty
MODE P. C. B. ASS'Y			
75	141-4-250T-65601	P.C.B. Ass'y, Mode Swith	1
	4-238T-37500	Switch Mono/Stereo FM Mute	1
TUNER (AM) P. C. B. ASS'Y			
76	141-4-250T-66201	P.C.B. Ass'y, Tuner (AM)	1
T251	4-256T-28040	I. F. T.	1
T252	4-256T-26340	I. F. T.	1
CF251	4-256T-70100	CF Filter	1
L153	4-258T-36540	O S C Coil	1
CT151	4-224R-11600	Trimmer	1
CT152	4-224T-15600	Trimmer	1
CT153,154	4-224T-15471	Trimmer	2
S1 ~ 3	4-238T-58700	Push Switch	1
L155	4-258T-33741	O S C Coil	1
IC151		IC LA1245	1
CV151,152		Varacotr Diode KV1226 X	2
D251,253		Diode DS442X	2
D252		Diode 1S189	1
	RESISTORS All Resistors are Carbon T-type ±5% ¼W, unless otherwise noted.		
R151,153		10K ohm	2
R154		100 ohm	1
R251		1K ohm	1
R252		330 ohm	1
R253		3.3K ohm	1
R254		180 ohm	1
R255		10K ohm	1
R256		10K ohm	1
R257		10K ohm	1
R258		1K ohm	1
R259		18K ohm	1
R260		220 ohm	1
R261		5.6K ohm	1
R262		2.2K ohm	1
R263		47K ohm	1
R264		8.2K ohm	1
R265		1K ohm	1
R266		Solid 82 ohm ½W	1
R267		4.7K ohm	1
R268		56K ohm	1
	CAPACITORS		
C154		Ceramic 8pF (N1000) ±0.5pF 50V	1
C152,153, 156		BC Con 0.022μF ±20% 25V	3
C157		Ceramic 0.001μF b10% 50V	1
C158		Ceramic 0.047μF +80–20% 50V	1
C159,252		BC Con 0.022μF ±20% 25V	2
C251		BC Con 0.068μF ±20% 25V	1
C253		Ceramic 0.001μF ±10% 50V	1
C254,256, 161		BC Con 0.047μF ±20% 25V	3
C255,160		BC Con 0.01μF ±20% 25V	2
C262		BC Con 0.056μF ±20% 25V	1
C155		P P Con 390pF ±5% 100V	1
C163		Ceramic 180pF (NPO) ±10% 50V	1
C164		Ceramic 15pF ±10% 50V	1
C162		Ceramic 43pF (NPO) ±10% 50V	1
C165		Ceramic 10pF ±10% 50V	1
C261		BC Con 0.01μF ±10% 25V	1
C263		BC Con 0.0056μF ±10% 25V	1
C264		BC Con 0.01μF ±10% 25V	1
C260		Electrolytic 100μF 16V	1
C257		Electrolytic 4.7μF 35V	1
C258		Electrolytic 3.3μF 50V	1
LAMP P. C. B. ASS'Y			
77	141-4-250T-66301	P.C.B. Ass'y, Lamp	1
LP901	4-612T-13700	Lamp	1

Ref. No.	Part No.	Description	Q'ty
PRESET SWITCH P. C. B. ASS'Y			
78	141-4-250T-72201	P.C.B. Ass'y, Preset Switch	1
S1 ~ 6	4-238T-45700	Switch	6
S7	4-238T-45700	Switch	1
S8,9	4-238T-45700	Switch	2
D1 ~ 6		LED SLP251B50 Green	6
D7		LED SLP151B-50 Red	1
	RESISTORS		
R1		330 ohm	1
R2		820 ohm	1
POWER TRANS P. C. B. ASS'Y			
74	141-4-250T-65501	P.C.B. Ass'y, Power Trans	1
	141-2-382T-18900	Terminal	2
R918		Solid 10M ohm ½W	1

SCHEMATIC DIAGRAM



Q1, 2, 3
Q301, 302, 304
Q351, 353, 404
Q410, 411, 407
Q901, 902, 904 ····· 2SC536

Q102, 104, 401 ····· 2SC535

Q151, 403, 409 ····· 2SC1571

Q101 ····· 3SK73

Q103, 201
Q405, 406 ····· 2SC930

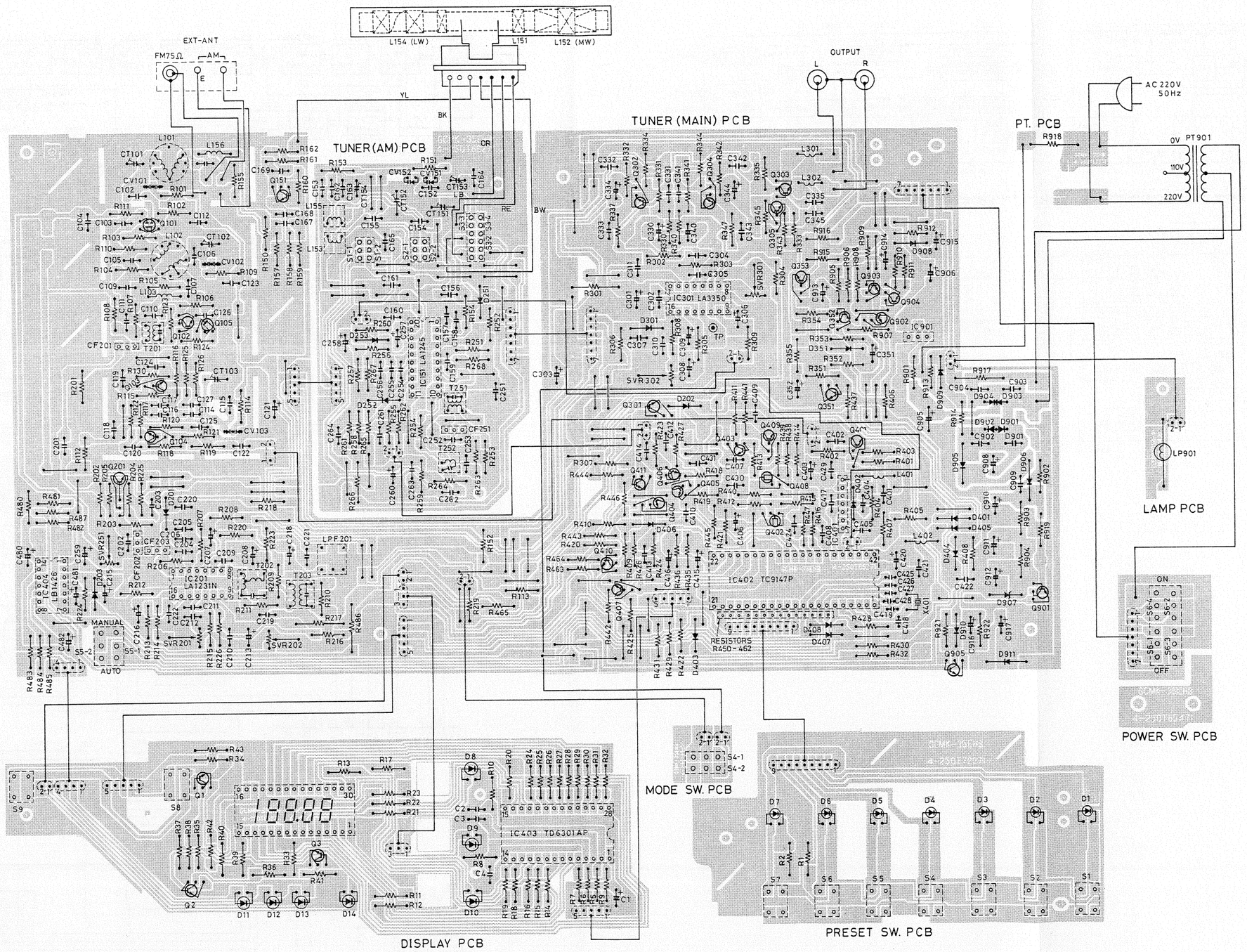
Q303, 305 ····· 2SD1012

Q352, 903 ····· 2SA608

Q105 ····· 2SK212

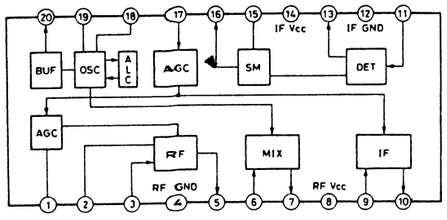
Q402, 408 ····· 2SK222

Q905 ····· 2SD438

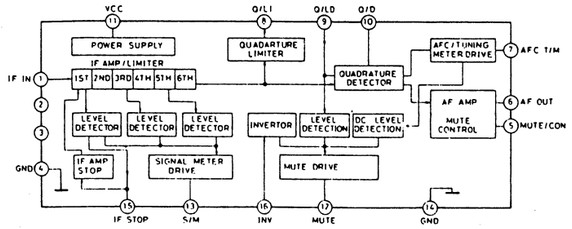


IC BLOCK DIAGRAM

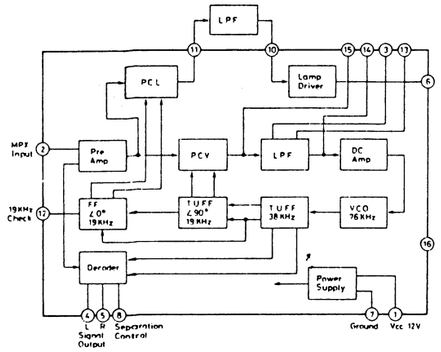
LA1245 (AM TUNER SYSTEM)



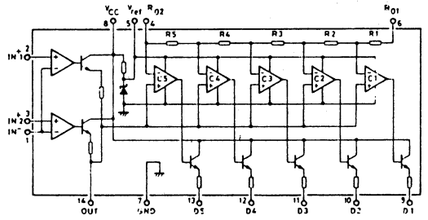
LA1231N (IF • SYSTEM)



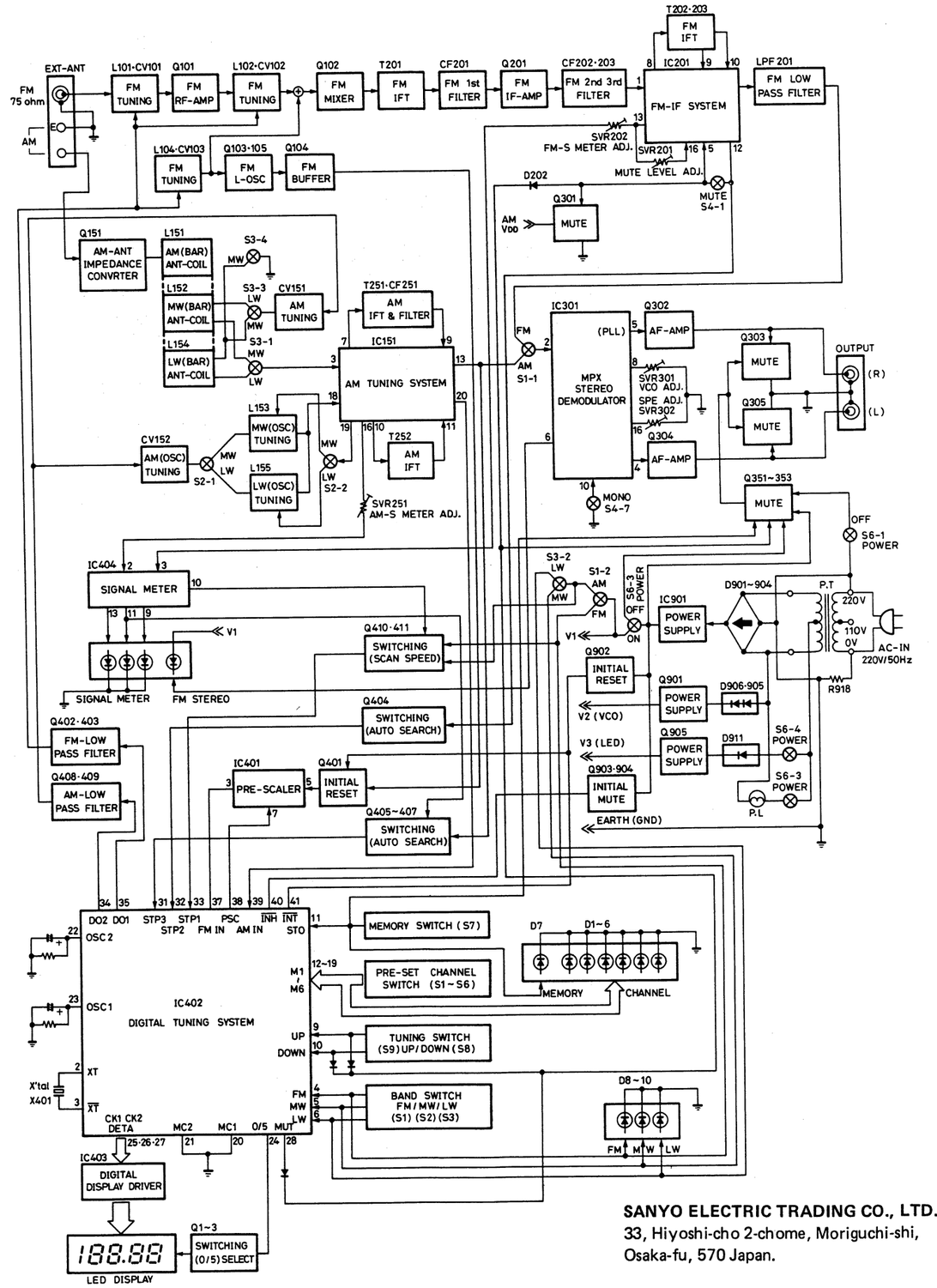
LA3350SS (PLL MPX STEREO DEMODULATOR)



LB1426 (SIGNAL METER)



BLOCK DIAGRAM



SANYO ELECTRIC TRADING CO., LTD.
33, Hiyoshi-cho 2-chome, Moriguchi-shi,
Osaka-fu, 570 Japan.

Sep./'82/2000 KM Printed in Japan.